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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/854,403	05/11/2001	Godefridus A.M. Hurkx	PHN 16,741A	8359

7590 02/26/2003

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EXAMINER

MALDONADO, JULIO J

ART UNIT PAPER NUMBER

2823

DATE MAILED: 02/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/854,403

Applicant(s)

HURKX ET AL.

Examiner

Julio J. Maldonado

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 December 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6-20 is/are pending in the application.
- 4a) Of the above claim(s) 11-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. The non-final rejection as set forth in paper No.5 is withdrawn in response to applicants' request for reconsideration and amendments.
2. Claims 11-20 are newly added.
3. A new rejection is made as set forth in this Office Action.
4. Claims 6-20 are pending in the application.

Election/Restrictions

5. Newly submitted claims 11-20 directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: claims 6-10 are drawn to a method of manufacturing a semiconductor device whereas claims 11-20 are drawn to a semiconductor device. Claims 6-10 and 11-20 are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by another and materially different process that does not include the step of providing a substrate of the first conductivity type, and forming thereon an epitaxial layer of the first conductivity type to form the first semiconductor region.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 11-20 withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 7 and 8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In reference to claims 7 and 8, the terms "smaller thickness" and "lower thickness", render the claims indefinite since they fail to point out how "small" or "low" the respective thicknesses are.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blanchard (U.S. 4,345,265) in view of Baliga et al. (U.S. 4,969,027).

In reference to claim 6, Blanchard (Figs.4-6) teaches a method to form a MOSFET device including providing a substrate (10) of the first conductivity type, and providing thereon a layer (12) of the first conductivity type to form the first semiconductor region (10, 12); forming a second semiconductor region (22, 23) on the first semiconductor region (10, 12), the second semiconductor region having a partial region (22) with a smaller flux of dopant atoms than other part of the second semiconductor region (22, 23); forming a third semiconductor region (32) which lies recessed on another part of the second semiconductor region (see Fig.5-6); and providing a first and second (36) and a third (40) regions with a connection conductor respectively, wherein the second conductor is adjacent to the partial region of the second semiconductor region (column 3, line 23 – column 6, line 39).

Blanchard fails to teach forming an epitaxial layer of the first conductivity type on the substrate. However, Baliga et al. (Fig.1A) in a related method to form a power transistor teach forming an epitaxial layer (14) of the first conductivity type on a substrate (12), forming a first semiconductor region (12, 14) (column 4, lines 4 – 53). Therefore, it would have been obvious to one with ordinary skill in the art to combine the teachings of Baliga et al. and Blanchard to enable the layer of the first conductivity type of Blanchard to be formed epitaxially as taught by Baliga et al.

In reference to claim 7, Blanchard teaches that the partial region of the second semiconductor region (22, 23) is formed below the second connection conductor (36) and is given a smaller thickness and a lower doping concentration; the partial region of the second semiconductor region (22, 23) is formed by means of ion implantation; and

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forming a fourth semiconductor region (34) of the first conductivity type between the partial region of the second semiconductor region (22, 23) and the second connection conductor (36) simultaneously with the third semiconductor region (32) (column 3, line 23 – column 6, line 39).

Response to Arguments

11. Applicant's arguments with respect to claims 6-10 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

12. Papers related to this application may be submitted directly to Art Unit 2823 by facsimile transmission. Papers should be faxed to Art Unit 2823 via the Art Unit 2823 Fax Center located in Crystal Plaza 4, room 3C23. The faxing of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (15 November 1989). The Art Unit 2823 Fax Center number is **(703) 305-3432**. The Art Unit 2823 Fax Center is to be used only for papers related to Art Unit 2823 applications.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Julio J. Maldonado** at **(703) 306-0098** and between the hours of 8:00 AM to 4:00 PM (Eastern Standard Time) Monday through Friday or by e-mail via julio.maldonado@uspto.gov. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri, can be reached on (703) 306-2794.

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Any inquiry of a general nature or relating to the status of this application should be directed to the **Group 2800 Receptionist** at (703) 308-0956.

JMR
2/22/03

George Fourson
Primary Examiner

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